What is claimed is:

1. A method for operating a cardiac rhythm management device, comprising:

sampling an electrogram signal from a sensing channel of the device to obtain a series of samples, where each sample can be designated by X[n] with n an integer;

determining whether each sample represents a local peak or not, wherein a sample X[n] is a local peak if its amplitude is either: 1) greater than the amplitude of the preceding sample X[n-1] by a specified threshold value δ_1 and also greater than the amplitude of the subsequent sample X[n+1] by the specified threshold δ_2, or 2) less than the amplitude of the preceding sample X[n-1] by a specified threshold δ_3 and also less than the amplitude of the subsequent sample X[n+1] by the specified threshold δ_4;

computing a local peak density in a predetermined number of consecutive samples;

computing a noise flag as either set or cleared in accordance with the computed local peak density, wherein the noise flag is set if the local peak density exceeds a first threshold value; and,

estimating a noise level in the electrogram signal by computing a noise statistic from a series of samples when the noise flag is set.

2. The method of claim 1 further comprising clearing the noise flag when the local peak density in the predetermined number of consecutive samples falls below a second threshold value, wherein the second threshold value is less than the first threshold value.

3. The method of claim 2 further comprising estimating a noise floor in the electrogram signal by calculating a noise statistic from a series of samples when the noise flag is cleared.

4. The method of claim 1 wherein the calculated noise statistic is selected from a group consisting of an absolute peak, a mean of absolute values, a median of absolute values, a mode of absolute values, a root-mean square, and a mean square over the series of collected electrogram samples. .

5. The method of claim 1 wherein the noise statistic is calculated from the same samples in which the local peak density is computed to set or clear the noise flag.

6. The method of claim 1 wherein the noise statistic is calculated from a predetermined series of samples associated with the time when the noise flag is set or cleared.

7. The method of claim 1 wherein the local peak density is computed by counting the number of local peaks in the predetermined number of samples.

8. The method of claim 3 wherein the noise level or noise floor is estimated on a beat-to-beat basis.

9. The method of claim 3 wherein the noise level or noise floor is estimated each time the noise flag is set or cleared, respectively.

10. The method of claim 3 wherein the noise level or noise floor is estimated at predetermined time intervals.

11. The method of claim 3 further comprising detecting a QRS complex when a beat statistic computed from a predetermined number of consecutive samples exceeds a specified beat threshold value and excluding a range of samples around the sample where QRS complex is detected from the computation of the noise statistic used to estimate the noise level or the noise floor.

12. The method of claim 11 wherein the beat statistic is a weighted average of the predetermined number of consecutive samples.

13. The method of claim 1 further comprising detecting a QRS complex when a beat statistic computed from a predetermined number of consecutive samples exceeds a specified beat threshold value and excluding a range of samples around the sample where QRS complex is detected from the computation of the local peak density used to compute the noise flag.

14. The method of claim 1 further comprising:

counting the number of local peaks in a predetermined number of consecutive windows each of consecutive samples;

declaring a window as noisy if the number of local peaks in the window exceeds a specified threshold value K;

setting the noise flag if the number of noisy windows in the predetermined number of windows exceeds the first threshold value.

15. The method of claim 14 further comprising computing the noise statistic used to estimate the noise level from the samples in the predetermined number of consecutive windows.

16. The method of claim 14 further comprising detecting a QRS complex when a beat statistic computed from a predetermined number of consecutive samples exceeds a specified beat threshold value and excluding windows containing a detected QRS complex from the computation of the noise statistic used to estimate the noise level.

17. The method of claim 1 further comprising:

computing a local peak score for each of a predetermined number of consecutive windows each of consecutive samples, where the local peak score of each window is the number of local peaks in that window;

computing a local peak score statistic for the predetermined number of consecutive windows; and,

setting the noise flag if the local peak score statistic exceeds the first threshold value.

18. The method of claim 17 wherein the local peak score statistic is selected from a group consisting of a sum, a maximum value, a mean, a median, a mode, a mean square, and a root-mean square of the local peak scores of the predetermined number of windows.

19. The method of claim 1 wherein the noise statistic is computed as a moving average, an autoregressive average, or a cascade or linear combination of previously computed noise statistics or averages of previously computed noise statistics.

20. The method of claim 1 further comprising adjusting a sensing threshold or threshold profile of a sensing amplifier in accordance with the estimated noise level when the noise flag is set.

21 The method of claim 3 further comprising adjusting a sensing threshold or threshold profile of a sensing amplifier in accordance with the estimated noise floor when the noise flag is cleared.

22. The method of claim 20 wherein the sensing threshold, a starting value, decay rate, or sensing floor of the threshold profile, is adjusted by multiplying its nominal value by a coefficient and then adding an offset value to the result, where the offset value and coefficient value are based upon the estimated noise level.

23. The method of claim 21 wherein the sensing threshold, a starting value, decay rate, or sensing floor of the threshold profile, is adjusted by multiplying its nominal

value by a coefficient and then adding an offset value to the result, where the offset value and coefficient value are based upon the estimated noise floor.

24. A cardiac rhythm management device, comprising:

one or more sensing channels for sensing intrinsic cardiac activity;

means for sampling an electrogram signal from a sensing channel of the device to obtain a series of samples, where each sample can be designated by X[n] with n an integer;

means for determining whether each sample represents a local peak or not, wherein a sample X[n] is a local peak if its amplitude is either: 1) greater than the amplitude of the preceding sample X[n-1] by a specified threshold value δ_1 and also greater than the amplitude of the subsequent sample X[n+1] by the specified threshold δ_2, or 2) less than the amplitude of the preceding sample X[n-1] by a specified threshold δ_3 and also less than the amplitude of the subsequent sample X[n+1] by the specified threshold δ_4;

means for computing a local peak density in a predetermined number of consecutive samples;

means for computing a noise flag as either set or cleared in accordance with the computed local peak density, wherein the noise flag is set if the local peak density exceeds a first threshold value; and,

means for estimating a noise level in the electrogram signal by computing a noise statistic from the series of samples when the noise flag is set.

25. The device of claim 24 further comprising adjusting a sensing threshold of a sensing channel in accordance with the estimated noise level when the noise flag is set.